

REMARKS

Reconsideration of the application and allowance of the pending claims are respectfully requested based upon the remarks below. By this Amendment, claims 1 and 9 are amended, claims 2 and 6 are canceled, and new claims 20 and 21 are added. Accordingly, claims 1, 3-5, 7-16, and 20-21 are pending in this application. No new matter is presented in this Amendment.

Claims 1, 3, 4, 6, 7, and 9 stand rejected under 35 U.S.C. §102(e) as being anticipated by the Applicant's admitted prior art (AAPA). A rejection based on 35 U.S.C. §102 requires every element of the claim to be included in the reference, either directly or inherently. Applicant respectfully submits that this rejection is traversed by the preceding amendments to the claims and the following argument.

Independent claim 1 has been amended to more clearly recite the Applicant's disclosed invention and is not intended to narrow the scope of the recited claims. As such, independent claim 1 is amended to recite, *inter alia*, at least one led chip directly mounted on a base of high heat conductivity wherein the LED chip is connected to an applied power through a circuit board, and the circuit board is disposed on the base. The AAPA does not disclose, teach or suggest the LED and LED lamp as described above. Specifically, the AAPA only discloses a base mounted on a circuit board and fails to disclose, teach, or suggest the Applicant's structure wherein the circuit board is "disposed on the base," as recited in claim 1.

Furthermore, as amended, independent claim 1 recites wherein "a screw mechanically connects a heat sink to a bottom surface of the metal base." AAPA does not disclose, teach or suggest this feature.

The object of the invention, the technical means and the advantages of the invention are consistent. As disclosed in page 2, first full paragraph of the specification, the object of the invention is:

"to overcome the disadvantages of great heat resistance between the LED and the heat sink, the rapid increase of the chip temperature and thereby the rapid decrease of the LED luminous efficiency; to overcome the disadvantages of glue split between the metal base and the circuit board after

a long operating time due to the different heat expansion coefficient between them, the great heat resistance increase between LED and the heat sink and thereby the LED damage by overheating; so that a high power, high efficiency and long lifetime LED and LED lamp can be provided.”

Accordingly, lowering the heat resistance between LED chips and the heat sink is key to producing high power, high efficiency and long lifetime LEDs.

The advantages of the Applicant’s device are listed on pages 3 and 4 of the specification:

“(1) The heat sink is connected directly and closely to the base so that the heat resistance between the chip and the heat sink is nearly zero, and leading to the efficient escape of the heat created by the LED. In addition, the metal base is connected to the heat sink by metal screws and therefore the heat connection between them is reliable and unchangeable after a long time operation. Therefore, a high power, high efficiency and long lifetime LED can be fabricated;

(2) The circuit board is disposed on or around the metal base to facilitate the connection between chips and to facilitate dense installation, without the increase of the heat resistance between the chip and the sink.”

Based on the above description, Applicant discloses that the object of this invention is to solve the problem of high heat resistance between LED chips and the heat sink. Amended claim 1 recites wherein the base on which the LED chips are mounted is a metal base, and a screw tightly attaches the metal base to the heat sink. Applicant’s Fig. 2, 3 and 5, clearly illustrate that the screw and the base form an integrated structure, wherein the bottom surface of the base is tightly connected to the upper surface of the heat sink. Indeed, new claim 21 recites wherein the screw is integral to the bottom surface of the base. Obviously, this is a face to face contact between the bottom surface of the base and the heat sink. Applicant submits that one of ordinary skills in the art would understand that no matter how much heat expansion exists due to high power and high temperature, this structure will always keep the base have excellent heat contact with the heat sink.

Therefore, the heat produced by the LED chips can pass smoothly through the bottom surface of the base to the heat sink.

Applicant submits that the LED will work in a relatively low temperature, improving efficiency and lifetime. Furthermore, the new structure of the integrated base secured to the heat sink can keep perfect mechanical contact when experiencing shaking and trembling, maintaining heat contact and continued operation. In the technical field of LEDs, no such integrated structure has been used to solve the heat dissipation, and significant progress has been made as is described in the third paragraph on page 4, of the specification.

Because AAPA does not disclose, teach or suggest at least the Applicant's structure wherein the base is mechanically connected to a heat sink by a screw, the rejection of claim 1 under 35 U.S.C. §102(e) is improper. In addition, amended independent claim 9 similarly recites "wherein the base is a metal base and a screw mechanically connects the heat sink to a bottom surface of the metal base." Accordingly, claim 9 is likewise allowable over AAPA. Claims 3, 4, 6, and 7 depend from independent claim 1 and are likewise patentable over AAPA at least for their dependence on an allowable base claim, as well as for additional features they recite. Withdrawal of the rejection over AAPA is respectfully requested.

Furthermore, Applicant respectfully traverses the rejection of claims 2, 9, and 13 under 35 U.S.C. §103(a) over AAPA in view of U.S. Patent Application No. 2002/0071275 to Worgan.

The Examiner suggests that Worgan remedies the deficiencies of AAPA. Applicant respectfully disagrees. Worgan appears to only disclose the structure of a lamp, and suggests how to make lamps with LEDs having ordinary structures. Applicant respectfully submits that claim 1 recites a new LED structure, and further submits that LED and lamp belongs to totally different technical fields. Worgan uses screws to fix PCB on lamp's heat sink just for mechanical fixation, without regard to heat dissipation. To Worgan, screw fixation is just one of many methods to mechanically secure the PCB to lamp's heat sink, and has no particular benefit over other methods. As such, nowhere does Worgan disclose, teach, or suggest, that using screws can increase the heat contact between LED base and heat sink or is more advantageous than other securing methods.

Accordingly, Applicant respectfully submits that claims 2, 9, and 13 would not have been obvious because the disclosure of Worgan does not rectify the above-described deficiency of the AAPA regarding independent claims 1 and 9. Withdrawal of the rejections is respectfully requested.

New claim 20 depends from independent claim 1 and is likewise allowable at least for its dependence on an allowable base claim, as well as for additional features it recites.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 3-5, 7-16, and 20-21 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

LOWE HAUPTMAN HAM & BERNER, LLP


Benjamin J. Hauptman
Registration No. 29,310

1700 Diagonal Road, Suite 300
Alexandria, Virginia 22314
(703) 684-1111
(703) 518-5499 Facsimile
Date: October 10, 2007
BJH:ERM/tal